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SPECIFICATIONS

Direct Modulation Low DOP ASE Broadband Source

DL-ASE-IM-CSC107A

A. PRODUCT DESCRIPTION

The DenseLight DL-ASE-IM-CSC107A is a series Low DOP ASE broadband source for fiber optic gyroscope, fiber optic sensor, optical test instrument and optical coherence tomography. This DL-ASE-IM-CSC107A consists of a DenseLight standard ASE broadband source, a temperature controller and a built-in current driver capable for digital or analog modulation input, which can be customized with various options to meet your specific needs. The broadband source covers over a wide wavelength range include O, E, S, C and L bands.

B. FEATURES

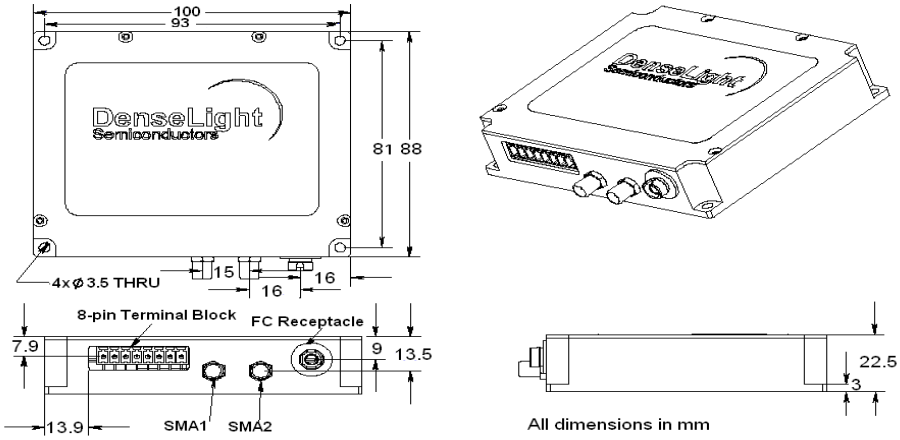
- Ex-fiber output power of >10mW
- Spectral power density >-12dBm/nm over 1525 to 1565nm
- Low Degree of Polarization
- FC receptacle
- Integrated optical isolator
- Single +5V power supply (optional power adapter)
- Built-in current driver and temperature controller
- Operating temperature 0 to 65 °C (<0°C or >65°C extended range available)
- Over temperature protection and internal PCB temperature monitor
- Analog intensity modulation up to 6MHz (transconductance amplifier performance)
- Pulse or digital modulation up to 200MHz
- High wall-plug efficiency
- Compact size
- RoHS Compliance
- Telcordia Qualified broadband source (GR-468-CORE)

C. APPLICATIONS

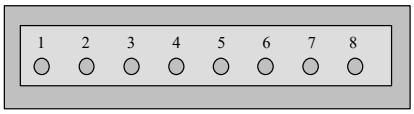
- Fiber Optic Gyroscope
- Optical Test Instrument
- Fiber Optic Sensors
- Fiber Optic Communications
- Optical Coherence Tomography
- Biomedical Imaging Device
- Clinical Healing Equipment

D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION

Dimension: L100 x W88 x H24.5 mm
Enclosure: Metal Case
Optical output: FC receptacle
Cooling: Air-cooled.
Electronic interface: 8-pin terminal block



E. PIN ASSIGMENT AND FUNCTION



8-pin terminal block (Pin 8 near to SMA1)

Pin No.	Symbol	Power/Control /Monitor	Analog /Digital	Input /Output	Description
1	P_{GND}	P	-	-	Power Supply Ground
2	V_S	P	-	-	+5V d.c.
3	OVRT	M	D	O	To report PCB over temperature and internal self-protection shutdown in operation (Active high)
4	T_{MON}	M	A	O	To monitor the temperature of PCB
5	N/C	-	-	-	-
6	N/C	-	-	-	-
7	LO_EN	C	D	I	To enable Light output (active low or no connection to enable SLED light driver)
8	A_{GND}	-	-	-	Signal ground for control and monitor signals

F. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis)	T_{op}	I_{op}	0	65	°C
Operating Relative Humidity [1]	RH	I_{op}	-	85	%
Storage temperature	T_{stg}	Unbiased	-40	85	°C
Input current	I_s	-	-	6	A
Input Power Supply	V_S	-	-	6	V

[1)] Non-condensing

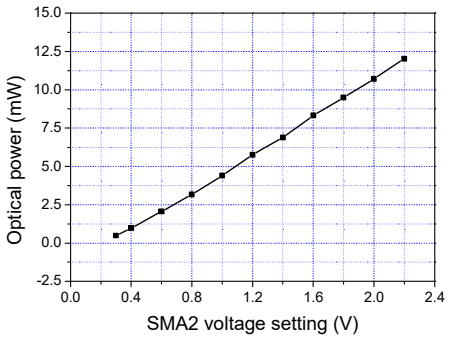
G. ELECTRICAL SPECIFICATIONS [2]

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Power Supply	V_S	T_{op} = 0 to 65°C	4.75	5	5.5	V
Input Current	I_S	T_{op} = 0 to 65°C	-	-	2.5	A
Total Power consumption	P_S	T_{op} = 0 to 65°C	-	-	12.5	W
Over Temperature	OVRT	Open-drain digital output with internal 1K pull-up to 3V for VH and 8mA current sink for VL				
	V_{OL}	Normal	0	-	0.45	V
	V_{OH}	Over-temp	2.0	-	3	V
Internal PCB Temperature Monitor	T_{MON}	Analog voltage: T_{MON} = 395mV + (6.2mV/°C x T), T = PCB temperature in °C				mV
Voltage	V_{OUT}	R_X = infinite	0	-	2.5	V
Output Impedance	R_{OUT}	-	-	150	-	Ω
Source Current	$\|I_{OUT}\|$	V_{OUT} = 2.5V	-	-	4	mA
Light Output Enable	LO-EN	Digital input with internal 10K pull-down for light output enable at logic low or no connection				
	V_{IL}	Normal	0	-	1	V
	V_{iH}	Over-temp	2.5	-	3.3	V

[2)] Unless otherwise specified. Tests are performed at T_{op} = 25°C

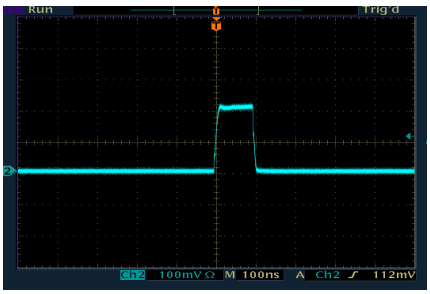
Operating mode [3]	Operation Setting	
	SMA1 connector (50Ω)	**SMA2 connector (50Ω)**
CW	Logic High, $2V \leq V_{IH} \leq 3V$	DC Voltage (User to set optical peak power through DC voltage to SMA2)[4)]
Digital modulation	External Trigger Input (CMOS/TTL compatible), $0 \leq V_{IL} \leq 0.8V$ and $2V \leq V_{IH} \leq 3V$	DC Voltage (User to set optical peak power through DC voltage to SMA2)[4)]
Analog modulation	Logic High, $2V \leq V_{IH} \leq 3V$	Transconductance amplifier operating on positive polarity analog input signal

[3)] There will be no optical output power if SMA1 or SMA2 is left unconnected, unless pre-bias power is specified. Pre-bias setting on SLED can be factory preset. Note: Factory default setting is zero.
[4)] Maximum SMA2 voltage setting is 2.2V. Unless otherwise specified in OGR.



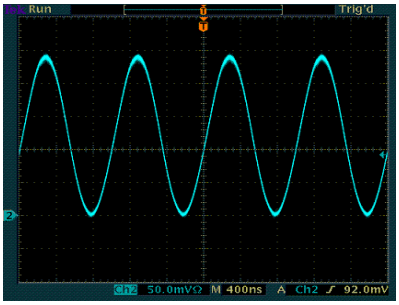
Optical power vs SMA2 voltage setting

Digital modulation:



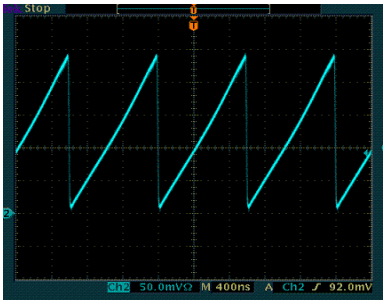
SMA1: Pulse waveform
Frequency= 100kz
Amplitude= 2V
SMA2: DC voltage 2V

Analog modulation



SMA1: Logic high (V_{IH} = 2V)
SMA2: Sine wave
Frequency: 1MHz
Amplitude= 0.3 to 2.3V

Analog modulation



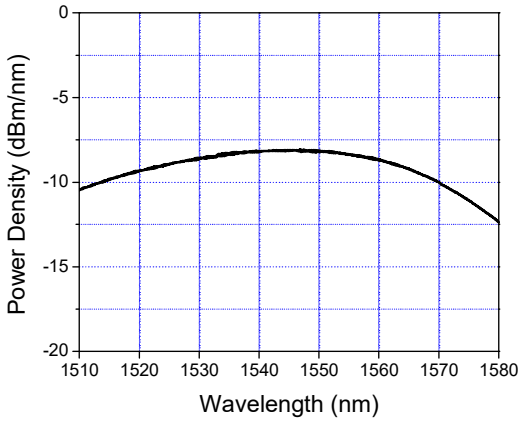
SMA1: Logic high (V_{IH} = 2V)
SMA2: Ramp wave
Frequency: 1MHz
Amplitude= 0.3 to 2.3V

H. OPTICAL SPECIFICATIONS

Parameter	Condition	Symbol	Min	Typ	Max	Unit
Power output	CW	P_o	10	-	-	mW
Power density @ 1525 to 1565nm	CW	$P_{density}$	-12	-	-	dBm/nm
Bandwidth @ 3dB	CW	B_{FWHM}	55	-	-	nm
Degree of polarization	CW	DOP	-	-	5	%
Output stability [5] 1 hour 8 hour	CW	Stb	-	-	± 0.05 ± 0.1	dB dB

[5] After 1-hour warm-up

I. TYPICAL OPTICAL PERFORMANCE



Spontaneous Emission Spectrum

J. DISCLAIMER FOR CUSTOMER SPECIFIC APPLICATIONS

Denselight product is not intended for use other than stated on the application note or as defined in the product specification. The performance of the product should always be tested in the actual application conditions. As our products are used in conditions beyond our control, we cannot assume any liability for damage caused through their use. Users of DenseLight products are solely responsible to thoroughly test and qualify their system and / or application for their intended application and have determined such at their sole discretion. DenseLight cannot assume any liability for the use of our products in conjunctions with other. Customer assumes the sole risk and liability of the product performance other than specified by the product specific data sheet or application notes without DenseLight's specific written consent.

K. SAFETY INFORMATION

The is DL-ASE-IM-CSC107A classified as Class 3R products per IEC 60825-1 laser safety requirements.